

REMARKS

By this Amendment, claims 35, 45, 52-53, 57-58 59-61 and 67-68 are amended. Claims 36-44, 46-51, 54-56 and 62-66 remain in the application. Thus, claims 35-68 are active in the application. Reexamination and reconsideration of the application are respectfully requested.

In item 4 on page of the Office Action, claims 35-40, 44, 47, 52-63 and 67-68 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Jorgensen et al. (U.S. 6,862,622) in view of Miller et al. (U.S. 5,920,701).

Without intending to acquiesce to this rejection, independent claims 35, 52-53, 59-60 and 68 have each been amended in order to more clearly illustrate the marked differences between the present invention and the applied references. Accordingly, the Applicants respectfully submit that the present invention is clearly patentable over the applied references for the following reasons.

As described beginning at line 9 on page 2 of the substitute specification, conventional data transmission systems can use a plurality of communications circuits. However, the conventional data transmission systems do not efficiently use an optimal communications circuit since data is unconditionally sent out to the same communications circuit regardless of the number of users that are receiving the data. Accordingly, the server in the conventional data transmission system transmits data on a communications circuit which is unsuitable for the transmission of the data when the bandwidth thereof is limited or when a number of users are requesting the same data.

Therefore, an object of the present invention is to provide a data transmission system and method which achieves an efficient use of wired and wireless communications circuits in terms of transmission bandwidth and which can allow users to download the data from a server less expensively.

To achieve this object, one feature of the present invention provides that an optimal communication circuit is selected based on both a transmission time limit in which the content data that is designated by a data terminal device (DTE) is to be available and the number of data terminal devices to which the same content data is addressed.

The present invention provides that a wired public circuit (e.g., see first communication circuit 4 in Figure 1) and a satellite circuit (e.g., see second communication circuit 5 in Figure 1) are exemplary communication circuits of a wired communication circuit and a wireless communication circuit, respectively. The satellite circuit is suitable for concurrently transmitting the same content data to a number of data terminal devices or data circuit terminating devices (DCE), which are connected to data terminal devices and store content data. That is, the wireless communication circuit of the present invention is operable to transmit the same content data to a plurality of data terminal devices or data circuit terminating devices by one transmission.

As described beginning at line 3 on page 31 of the substitute specification, if the number of data terminal devices to which the same content data is addressed is fewer than a predetermined number, the cost for transmitting the content data becomes higher than that of the wired communication circuit. On the other hand, if the number of data terminal devices to which the same content data is addressed is greater than a predetermined number, the cost for transmitting the content data becomes higher than that of the wireless communication circuit. For example, if 500 or more data terminal devices request the same content data, the data transmission system of the present invention selects the wireless communication circuit as the optimal communication circuit to transfer the requested content data from the server to the data terminal devices. If, on the other hand, fewer than 500 data terminal devices request the same content data from the server, the cost for transmitting the content data becomes cheaper by selecting the wired communication circuit, and thus, the data transmission system of the present invention selects the wired communication circuit as the optimal communication circuit for communicating the content data from the server to the requesting data terminal devices.

Accordingly, to achieve both efficient and cost-effective uses of wired and wireless communications circuits, the present invention provides that an optimal communication circuit is selected based on the number of data terminal devices to which the same content data is addressed, as well as a transmission time limit.

Independent claims 35, 52-53, 59-60 and 68 have each been amended to recite this feature of the present invention.

In particular, claims 35, 52, 60 and 68 each recite that either the server or any one of the wired communication circuit and the wireless communication circuit comprises a selecting part or performs a selecting operation of a method which determines a transmission time and selects either one of the wired and wireless communication circuits which provides the most optimal means for communication between the server and the data circuit terminating device, based on both a managed time limit and whether or not a reference value associated with the wireless communication circuit indicating that the wireless communication circuit is suitable for communicating the content data is satisfied by a number, which is included in predetermined communications information, of data terminal devices to which the content data is addressed. Claims 35, 52, 60 and 68 each recite that the optimal communication circuit (wired or wireless communication circuit) is selected in this manner so as to ensure that the content data is completely transmitted by the indicated time limit.

Claims 53 and 59 each recite that the data transmission system and method comprise a scheduling part or scheduling operation that determines a transmission timing and selects either one of the wired and wireless communication circuits based on both the at least one managed download condition and whether or not a reference value associated with the wireless communication circuit indicating that the wireless communication circuit is suitable for communicating the content data is satisfied by a number, which is included in predetermined communications information, of the plurality of data terminal devices to which the content data is addressed. Claims 53 and 59 each recite that the optimal communication circuit (wired or wireless communication circuit) is selected so as to ensure that the content data transmitted under the at least one download condition is completely received by the number of the plurality of data terminal devices in accordance with the download condition indicated by the content reservation request received from each of the number of data terminal devices.

Accordingly, independent claims 35, 52-53, 59-60 and 68 recite that an optimal communication circuit is selected based on both a transmission time limit (or download condition) and the number of data terminal devices to which the same content data is addressed.

As acknowledged by the Examiner, Jorgensen clearly does not disclose or suggest (1) a content reservation request which indicates a time limit in which the content data designated by a data terminal device is to be available in a data circuit terminating device, or which indicates a download condition for downloading the content data that is designated by one of a plurality of data terminal devices; and (2) the scheduling parts and corresponding method operations of claims 35, 52-53, 59-60 and 68.

Jorgensen discloses that a data network 142 (see Figures 2D and 3C) transmits data to other networks by means of routers 140a-f. Jorgensen also discloses that the routers 140a-f are used to route information (data) between multiple networks, and that the routers act as an interference between two or more networks. Jorgensen further discloses that the routers 140a-f can find the best path between any two networks, even if there are several different networks between the two networks (see Column 30, lines 42-47). However, Jorgensen does not even contemplate the above-described selection of an optimal communication circuit based on both a transmission time limit (or download condition) and the number of data terminal devices to which the same content data is addressed, as recited in claims 35, 52-53, 59-60 and 68.

Instead, Jorgensen merely discloses that, based on the destination address of a packet, the routers 140a-f route the packet to a router higher in the hierarchy of routers if the router is not directly connected to the destination domain of the packet (see Column 30, lines 48-61).

The Examiner applied Miller et al. to teach the content reservation request as indicating a time limit in which the content data designated by the data terminal device is to be available in the data circuit terminating device, as well as the time limit management part and the scheduling part of the server or the wired and/or wireless communication circuits of claims 35, 52-53, 59-60 and 68.

Miller et al. discloses a system of scheduling data transmission in which a server 14 transmits content data to a replicated server 20 through a communications network 24 (Column 4, lines 38-40). Miller et al. also discloses that a resource scheduler 10 schedules the transmission of content data by making a transmission determination based on available bandwidth, the available time for completing the transmission of content data, the amount and size of the content data to be transmitted, and transmission priority

levels (see Column 4, lines 47-55). The content data that is delivered to the replicated server 20 can then be relayed to a user terminal 22₁, 22₂ and/or 22₃ through another network 26 (Column 4, lines 56-69). Miller et al. also discloses that each of the networks 24, 26 can be a computer such as a WAN, LAN, Internet, wireless network, satellite network, a combination of these types of networks, or some other communication medium (Column 4, line 66 to Column 5, line 4).

However, Miller et al. does not disclose or suggest selecting an optimal communication circuit, between a wired communication circuit and a wireless communication circuit, based on both a transmission time limit (or download condition) and the number of data terminal devices to which the same content data is addressed, as recited in claims 35, 52-53, 59-60 and 68. In fact, Miller et al. does not even contemplate taking into consideration the number of data terminal devices to which the content data is addressed when scheduling the transmission of content data to the replicated server 20 through the communications network 24 or when selecting an optimal communication circuit.

Accordingly, similar to Jorgensen, Miller et al. clearly does not disclose or suggest selecting an optimal communication circuit based on both a transmission time limit (or download condition) and the number of data terminal devices to which the same content data is addressed, as recited in claims 35, 52-53, 59-60 and 68.

Because of the clear distinctions discussed above, it is submitted that the teachings of Jorgensen and Miller et al. clearly do not meet each and every limitation of claims 35, 52-53, 59-60 and 68.

Furthermore, it is submitted that the distinctions discussed above are such that a person having ordinary skill in the art at the time the invention was made would not have been motivated to modify Jorgensen and Miller et al. in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 35, 52-53, 59-60 and 68.

Therefore, it is submitted that the claims 35, 52-53, 59-60 and 68, as well as claims 36-51, 54-58 and 61-67 which depend therefrom, are clearly allowable over the prior art as applied by the Examiner.

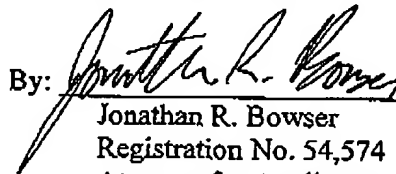
In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is respectfully solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

A fee and a Petition for a one-month Extension of Time are filed herewith pursuant to 37 CFR § 1.136(a).

Respectfully submitted,

Takeshi KOKADO et al.

By: 
Jonathan R. Bowser
Registration No. 54,574
Attorney for Applicants

JRB/nrj
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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